CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2002-0204
FOR
ANADARKO PETROLEUM CORPORATION; BOEING SATELLITE SYSTEMS, INC.; CALPINE; CYPRESS AMAX MINERALS COMPANY; FREEPORT MCMORAN, INC./AMINOIL, INC.; GEOTHERMAL INC.; GEOTHERMAL KINETICS, INC.; HUGHES AIRCRAFT COMPANY/THERMOGENICS, INC.; IMC GLOBAL; MAXUS ENERGY CORPORATION; MCR GEOTHERMAL; MSR PUBLIC POWER AGENCY; NATOMAS; NORTHERN CALIFORNIA POWER AGENCY; OCEAN ENERGY RESOURCES INC.; PACIFIC GAS AND ELECTRIC COMPANY; PHELPS DODGE; PHILLIPS PETROLEUM COMPANY; REPUBLIC GEOTHERMAL; SACRAMENTO MUNICIPAL UTILITY DISTRICT; SANTA FE GEOTHERMAL INC./OCCIDENTAL GEOTHERMAL INC.; SHELL OIL COMPANY; STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES; SUNOCO; THERMAL POWER; AND UNION OIL COMPANY OF CALIFORNIA DBA UNOCAL
GEOTHERMAL INC. FACILITY
CLASS II SURFACE IMPOUNDMENTS AND DISPOSAL TRENCHES
CLOSURE, POST-CLOSURE MAINTENANCE AND GROUNDWATER CLEANUP
LAKE COUNTY

The Geothermal Inc. Facility is an inactive disposal facility located approximately four miles southeast of Middletown consisting of seven surface impoundments and three solid waste disposal trenches that formerly accepted liquid and solid wastes produced by geothermal exploration, steam power generation and other geothermal related activities. Groundwater monitoring at the facility indicates that wastes have impacted underlying groundwater primarily with sulfate and boron as well as elevated concentrations of total dissolved solids. This Monitoring and Reporting Program (MRP) is being issued to the companies and agencies listed above pursuant to Sections 13304 and 13267 of the California Water Code. Monitoring of groundwater and surface water is necessary to ensure that closure and cleanup activities at the facility are improving water quality.

The Discharger shall maintain water quality monitoring systems that comply with the provisions of Title 27, California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 3, Subchapter 3, and are appropriate for detection monitoring, evaluation monitoring, and corrective action monitoring.

Failure to comply with this MRP constitutes non-compliance that can result in the imposition of civil monetary liability under authority granted in the California Water Code.

A. MONITORING AND OBSERVATIONS

1. Groundwater Monitoring

The Discharger shall sample groundwater from monitoring wells A-2 through A-5, A-7, A-8, EX-4, EX-10, FMW-5 through FMW-8, MW-6B, MW-102 through MW-110, and MW-113 through MW-119, as well as any other wells installed at the facility after adoption of these WDRs. The Discharger shall collect samples from the groundwater monitoring wells as specified in Table 1. Sample collection shall follow standard EPA protocol. For each monitored groundwater body, the Discharger shall measure the water level in each well (in feet and

hundredths, MSL) and determine groundwater gradient and direction at least quarterly, including the times of expected highest and lowest water level elevations for the respective groundwater body. Groundwater elevations shall be measured for a given groundwater body within a period of time short enough to avoid temporal groundwater flow variations which could preclude accurate determination of groundwater gradient and direction.

2. Surface Water Monitoring

The Discharger shall monitor surface water in accordance with Table 1 at locations SW01, SW02, SW03 and LAKE as shown on Attachment B.

TABLE 1 – GROUNDWATER AND SURFACE WATER MONITORING PROGRAM

Parameter	Units	Test Method	Frequency
Field Parameters			
Temperature	°F	Field Measure	Semiannually[1]
Groundwater Elevation	Feet (100ths), MSL	Field Measure	Quarterly
Specific Conductance	µmhos/cm	Field Measure	Semiannually[1]
pH	Number	Field Measure	Semiannually[1]
Turbidity	Turbidity units	Field Measure	Semiannually[1]
Monitoring Parameters			
Boron	mg/l	EPA 200.7	Semiannually[1]
Chloride	mg/l	EPA 300.0	Semiannually[1]
Sulfate	mg/l	EPA 300.0	Semiannually[1]
Total Dissolved Solids	mg/l	EPA 160.1	Semiannually[1]
Metals[2]	mg/l	See Footnote 2	Every 2 Years[1,2]
Volatile Organics	µg/l	EPA 8260B	5-Years[3]
Semi-Volatile Organics	µg/l	EPA 8270C	5-Years[3]

[1] For surface water, beginning with the first storm of the rainy season and during at least one other storm event during the wet season.
[2] Metals by EPA 200.7 except where noted: Arsenic (200.9), Barium, Chromium, Nickel, Selenium, Vanadium, and Zinc (every two years during the wet season).
[3] VOCs and SVOCs for detection and evaluation monitoring wells only (every five years during the wet season beginning during the first half of 2003). Excludes background wells.

B. REPORTING

The Discharger shall report monitoring data and information as required in this MRP. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in non-compliance with the WDRs.

1. Semiannual Reports

The Discharger shall report field and laboratory test results in semi-annual monitoring reports. The Discharger shall submit the semi-annual monitoring reports to the Board by **15 July** for the January through June reporting period and by **15 January** for the July through December reporting period. The Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The Discharger shall summarize the data to clearly illustrate compliance with waste discharge requirements or the lack thereof. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

Each semiannual report is to include:

(a) tabulated cumulative monitoring data (groundwater and surface water) including depth to groundwater measurements in monitoring wells and piezometers, groundwater elevations above mean sea level, and Concentration Limits from the most recent annual report;

(b) a groundwater contour map for the current quarter's groundwater elevation data showing hydraulic gradient and flow direction;

(c) a copy of the laboratory analytical reports;

(d) a discussion about the effectiveness of the closure in maintaining 5-feet of separation between groundwater and waste; and

(e) the status of any groundwater remediation, including all applicable data such as pumping rates and cumulative volume for each well, and a discussion about the effectiveness of groundwater remedial action, with any proposed changes or modifications

2. Annual Report

The second semiannual report shall also constitute the annual report for the previous calendar year. The annual report shall contain graphical summaries of the monitoring data so as to show historical trends, and shall include Concentration Limits for each Constituent of Concern in groundwater. The Discharger shall report to the Board the results of any monitoring done more frequently than specified herein.

Each annual report shall include the information listed for semiannual reports (above) as well as:

(a) graphical presentations of all groundwater and surface water monitoring data so as to show historical trends;

(b) groundwater contour maps for the previous year's groundwater elevation data showing hydraulic gradients and flow directions;

(c) a discussion of the long-term trends in the concentrations of any pollutants in groundwater and/or surface water;

(d) an updated Water Quality Protection Standard including proposed Concentration Limits for all Constituents of Concern for groundwater and surface water.

C. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) shall consist of the following elements:

1. Constituents of Concern;
2. Concentration Limits;
3. Monitoring Points (groundwater and surface water);
4. Point of Compliance; and
5. Compliance Period.

Each of these is described as follows:

1. Constituents of Concern

The list of Constituents of Concern shall include all parameters listed in Table 1 of this MRP.

2. Concentration Limits

The Discharger shall determine the Concentration Limit for each Constituent of Concern or Monitoring Parameter in groundwater based on background Monitoring Point data as required by §20415(e) of Title 27. The Discharger shall use the Concentration Limits as the basis of comparison with data from the Monitoring Points.

The Discharger shall update the concentration limits each time new background data becomes available (i.e. – semi-annually or annually depending on the frequency of monitoring for that constituent).

3. Monitoring Points

Groundwater:

The background Monitoring Point for groundwater shall be monitoring wells A-4, A-5, MW-102, MW-109, MW-110, MW-113, and any other background wells installed after the adoption of this Order.

The evaluation Monitoring Points for groundwater shall be monitoring wells A-7, EX-4, EX-10B, FMW-5 through FMW-8, MW-6B, MW-103, MW-105 through MW-108, MW-119 and any other monitoring wells installed in impacted groundwater after the adoption of this Order.

The detection Monitoring Points for groundwater shall be MW-104, MW-114, MW-116, MW-117 and MW-118, and any other detection monitoring wells installed in unimpacted groundwater after the adoption of this Order.

Surface Water:

The background surface water Monitoring Point shall be SW01. The detection Monitoring Points for surface water shall be SW02, SW03 and LAKE as shown on Attachment B.

4. Point of Compliance

The Point of Compliance for groundwater shall be the vertical surface located at the hydraulically downgradient limit of the waste management units that extends through the uppermost aquifer underlying the units. The Point of Compliance for surface water shall be surface water Monitoring Points SW02, SW03 and LAKE.

5. Compliance Period

The Compliance Period is the number of years equal to the active life of the waste management unit(s) plus at least three consecutive years of compliance with the Water Quality Protection Standard (as described in Title 27, Section 20410).

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

6 December 2002
Date

WLB

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. R5-2002-0204

APPROVING AN INITIAL STUDY
AND
ADOPTING A MITIGATED NEGATIVE DECLARATION
FOR
GEOTHERMAL INC. FACILITY
CLOSURE OF SURFACE IMPOUNDMENTS AND DISPOSAL TRENCHES
LAKE COUNTY

WHEREAS, the Regional Board proposes to adopt a Cleanup & Abatement Order for the closure of surface impoundments and disposal trenches at the Geothermal Inc. Facility in Lake County; and

WHEREAS, the Regional Board is the lead agency for this project under the California Environmental Quality Act and has conducted an Initial Study in accordance with Title 14, California Code of Regulations, Section 15063, entitled *Guidelines for the Implementation of the California Environmental Quality Act*; and

WHEREAS, mitigation measures identified in the Mitigated Negative Declaration will avoid the project's potential significant effects or will reduce such effects to a less than significant impact; and

WHEREAS, copies of the Initial Study and proposed Mitigated Negative Declaration were transmitted to or made available to all agencies and persons known to be interested in these matters; and

WHEREAS, the Regional Board received comments from various agencies and persons regarding the proposed project, Initial Study, or proposed Mitigated Negative Declaration. These comments have been considered and addressed in the response to comments and in the proposed mitigation measures that are part of the Mitigated Negative Declaration; and

WHEREAS, the Regional Board considered all testimony and evidence at a public hearing held on 6 December 2002 in Sacramento, California and good cause was found to approve the Initial Study and adopt a Negative Declaration;

NOW, before the California Regional Water Quality Control Board, Central Valley Region, BE IT RESOLVED as follows:

1. The Regional Board approves the Initial Study and adopts the Mitigated Negative Declaration including the Mitigation and Monitoring Plan for closure of the *Geothermal Inc. Facility.*

2. The record before the Regional Board contains no substantial evidence that a fair argument had been made that the project may have a significant effect on the environment.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 December 2002.

THOMAS R. PINKOS, Executive Officer

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